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**APPLICATION
FOR
UNITED STATES LETTERS PATENT**

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Title: DEVICE FOR GAS COMBUSTION

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SPECIFICATION

DEVICE FOR GAS COMBUSTION

Field of the Invention

[0001] The instant specification relates to an Invention Patent dealing with a device for gas combustion, which can be used for several purposes, such as, for instance, generating light through burning of gas, such as GLP, GN and GR, and, for this reason, it can be used as a means of lighting in residential, commercial, industrial facilities and others.

Background of the Invention

[0002] It is a general knowledge that gas, in its several varieties, is normally used in residential environment as a means for feeding stoves or further for producing water heating in central heating equipment.

[0003] Insofar as its use on a large scale is concerned, gas may be used as a means for generating electric energy in thermoelectric facilities, which uses it up in the generation of heat for heating boilers, which, by generating steam, drive special turbines which are, in turn, linked to electricity-generating units.

[0004] It is, however, in the ambit of use in small scale that gas could be better employed, acting, for instance, as a means of lighting production, which could be advantageously used in replacing conventional electric bulbs.

[0005] There has been to date, however, no totally functional device which can be used for safely converting, gas (GLP, GN, or GR) into light, and this fact negatively restricts the utilization of this source of energy to only the modalities of use described above, namely, as combustion in stoves or for producing water heating, which can be both used in douches as well as in taps of a general use.

[0006] One of the objects of this Invention Patent is that of providing a device for gas combustion showing a simple and functional embodiment, which can be safely used for producing light, replacing the conventionally electric bulbs used for this purpose.

[0007] Another object of this Invention Patent resides on the fact of providing a device for gas combustion which is equipped with safe means making it entirely compatible with the use on a large scale.

[0008] It is further an object of the present Invention patent providing a device for gas combustion, which may be used as a part and parcel of a system which is entirely possible of being controlled by electronic processors, and, thus, raising its level of automation and safety.

Brief Description of the Drawings

[0009] In light of the limitations as ascertained in the state of technique and with a view to reaching the objects above, the instant device has been developed for the gas combustion, object of this Invention Patent, which will be described in details with reference to the drawings listed below, wherein:

[0010] FIG. 1 illustrates a partial and schematic sectional view of the device now proposed, which is properly arranged to be employed as a lighting-generating means; and

[0011] FIG. 2 schematically illustrates a lighting-generating system based on the employment of the device for gas combustion now proposed.

Detailed Description

[0012] In conformity with the illustrations of the figures above, the device for gas combustion, object of this Invention Patent, is specially characterized by comprising a basic structure 1, which is formed by a solenoid valve 2, which is linked by one of its connections to gas-supplying piping 3, the other connection of solenoid valve 2 contacts a pressure regulator 4, at the end of which there is mounted a gas burner 5.

[0013] Basic structure 1 further comprises a pilot burner 6, and heat sensor 7, the former intended for producing the spark causing the gas supplied to the combustion burner 5 to ignite, whereas the latter will perform the function of a parameter for constantly measuring the heat index generated by the device proposed, signaling, for instance, a possible condition in which the gas burning through gas burner 5, has been discontinued, thus enabling that the means of external control 8 may discontinue the supply of the gas flow.

[0014] Solenoid valve 2 is preferably of the so-called type of a drum and gas internal thread of 3/8" or 1/2" inch, its contact being of the NF type, namely normally closed.

[0015] Pressure regulator 4 performs the function of intermediating the connection between solenoid valve 2 and gas burner 5, said pressure regulator enabling that a control be exercised over the pressure of gas flow which will reach gas burner 5, and

thus influencing directly on the intensity of the flame which aforesaid gas burner 5 will produce.

[0016] Optionally, pressure regulator 4 may be replaced with mechanisms allowing the total automation of the operation of the device now proposed, an example of one of these mechanisms is the motorized non-return valve (not illustrated).

[0017] The use of a motorized non-return valve enables the control means 8 to adjust the percent of gas necessary for a specific use. Hence, the device for gas combustion may be a part of a system such as the one illustrated in FIGS. 1 and 2.

[0018] Furthermore, in respect of the pressure regulator 4, one can notice that the same essentially shows a tubular configuration, with a fixation thread 9 at its two ends (front and rear), a calibrated orifice 4a being provided internally, through which the gas flow is to pass to reach gas burner 5.

[0019] The purpose of gas burner 5 is to receive the gas flow arriving through pressure regulator 4 and to distribute that gas in such a way that, during its burning, there be generated the highest possible amount of lighting.

[0020] Pilot gas burner 6 is intended for producing the spark which will initiate the gas combustion reaching as far as gas burner 4. Hence, aforesaid pilot gas burner 6 produces a high tension electron sparks through commands by software. The pilot gas burner may, for instance, be linked to a presence sensor (not illustrated), enabling the automation of its operation, or, further, to any type of a switch device, which may be easily operated by the user.

[0021] Pilot gas burner 6 is composed of a connection terminal 10, an electrode 11, a porcelain body 12 and a protection crown 13. Pilot gas burner 6 further relies upon a support structure 14 enabling its assembly on basic structure 1, such as viewed through

FIG. 1.

[0022] Heat sensor 7 performs the function of capturing the heat emitted by the flame produced by the combustion gas burner 5, emitting this sign to the data processor integrating an electronic module of control 15, which is a part and parcel of the control means 8 already cited. Hence, heat sensor 7 emits a sign in the presence of a flame and another sign equal to zero, in case of non-existence of presence of flame. In the circumstances, in case of inexistence of presence of flame, the sign emitted by heat sensor 7 determines the closing of solenoid valve 2, discontinuing the supply of gas to the device and keeping the safety of the system.

[0023] Such as properly illustrated by FIG. 1, heat sensor 7 comprises an optical coupler 16, a metallic body 17, processing module 18, bimetallic 19 and fixing thread 20.

[0024] FIG. 1 schematically illustrates, in a partial section, the light-generating unit 21 in direction to which there reach both the gas-supply piping 3, as well as the several electric connections 22 which feed solenoid valve 2, pilot gas burner 6 and heat sensor 7.

[0025] Same FIG. 1 schematically illustrates control electronic module 15 to which several electrical connections 22 of the device in issue reach.

[0026] Control electronic module 15 relies upon an on/off knob 23, a general switch 24, a fuse 25 and feeding connection 110/220VCA 26.

[0027] The same FIG. 1 further reveals that the control electronic module 15 also incorporates a transformer 27 and a sparker 28.

[0028] Moreover, in respect of FIG. 1, one can find out that the control electronic module 15 may be remotely controlled by a computer 29, which is connected thereto.

[0029] Concerning FIG. 2, it is schematically illustrated a lighting system based on the employment of the device now proposed. The lighting system of FIG. 2 relies upon

a set of light-generating units 21, each incorporating in its interior a model of the device for gas combustion herein submitted.

[0030] The light-generating units 21 are connected through a gas-supply piping 3 to a storage battery of gas 30, and, thus, forming a supply line which further relies, least, upon a pressure manometer 1 and valves 32.

[0031] The set of light-generating units 21 is also connected to a control electronic module 15 through a set of connection lines 22, these lines further comprising at least a gas sensor 33 acting as a complementary means for the safety of the system.

[0032] Also in FIG. 2, one can see that the control electronic module 15 is interlinked to a computer 29, through which there can be exercised the total control of the system.

[0033] The device of gas combustion herein dealt with, in terms of its simple and functional embodiment, can be easily converted into other types of use.

[0034] One of the alternative uses of the device for gas combustion (not illustrated) may contemplate, for instance, its use in a water-heating unit directly assembled close to a douche, making unnecessary, therefore, the use of central heaters.

[0035] The embodiment now proposed may further have several types of use, always having as a main purpose enabling a non-expensive alternative to some forms of use of conventional electric energy.

[0036] While the present invention has been illustrated by the description of one or more embodiments thereof, and while the embodiments have been described in considerable detail, they are not intended to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus and method and illustrative

examples shown and described. Accordingly, departures may be made from such details without departing from the scope or spirit of the general inventive concept.

WHAT IS CLAIMED IS: